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State Corporation Commission RECEIVED

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Division of Utility Accounting & Finance Richmond, VA

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November 1, 2016

VIA HAND DELIVERY

Ms. Kimberly B. Pate Director, Division of Public Utility Accounting & Finance

Mr. William F. Stephens Director, Division of Energy Regulation

State Corporation Commission 1300 E. Main Street Richmond, Virginia 23219

Dominion Virginia Power's

Annual Report to the State Corporation Commission on Renewable Energy,
in accordance with § 56-585.2 H of the Code of Virginia

Dear Ms. Pate and Mr. Stephens:

In accordance with \$56-585.2 H of the Code of Virginia, Virginia Electric and Power Company d/b/a Dominion Virginia Power ("Dominion" or "the Company") submits its 2015 Annual Report to the State Corporation Commission ("Commission") on Renewable Energy.

In 2015 Dominion Virginia Power met and exceeded its 2015 Virginia RPS Plan renewable target of 1,732,746 megawatt hours through implementation of its RPS Plan approved by the Commission. Renewable generation from the Company's own resources (including through contracts with Non-Utility Generators) provide 61 percent of Dominion Virginia Power's 2014 RPS Goal, some of which was banked and/or optimized as permitted by Va. Code § 56-585.2.

Legislation passed by the 2012 Virginia General Assembly provides that utilities participating in a RPS program may meet up to 20 percent of their annual RPS Goals using RECs issued by the Commission for qualified investments in renewable and alternative energy research and development activities. Pursuant to this provision, the Company has partnered with 12 institutions of higher education on Virginia renewable and alternative energy research and

development projects, an overview of which is provided in the Annual Report. The Company filed its 2015 Annual Report of Qualified Investments March 31, 2016 analyzing the prior year's PJM REC prices and quantifying its qualified investments made in 2015 to facilitate the Commission's validation and issuance of RECs for Virginia renewable and alternative energy research and development projects. Based on the methodology established with the first report in 2013, the Company will use 54,789 renewable energy certificates from qualified investments pursuant to Va. Code§ 56-585.2 J.

As noted in its 2016 Integrated Resource Plan filed on April 29, 2016 ("2016 Plan"), the Company is committed to a cost-effective renewable energy program, including wind and solar resources. In 2016, the Commission approved the Company's request to construct three separate solar projects that will provide approximately 56 MW of new solar capacity. The three solar projects are: (1) Scott Solar (17 MW); (2) Whitehouse Solar (20 MW); and (3) Woodland Solar (19 MW). Though these three solar projects will not be used for RPS compliance, the RECs produced by these three solar projects will be sold to reduce the costs of the projects for the benefit of customers.¹

Beyond development of specific projects, the Company continues to encourage its customers to support renewable energy generation resources through voluntary participation in several renewable energy options, including its Rider G Renewable Energy Program, which offers customers a companion rate for purchase and retirement of RECs equal to all or a portion of a customer's monthly consumption. The Company has also implemented a renewable generation pilot program, including an experimental and voluntary tariff; Rate Schedule RG-Renewable Energy Supply Service, designed to provide large, non-residential customers served under Schedule GS-3 and GS-4 the option to purchase a greater percentage of their energy needs from renewable energy. In addition, the Company received Commission approval in August 2015 for the Dominion Community Solar Pilot and experimental rate, designated "Rider DCS -Dominion Community Solar (Experimental), to allow customers to support the development of additional Company-owned, direct current distributed solar generation facilities sited in Virginia.

Thank you for the opportunity to provide this information. If you or your staff members have any questions, please contact me.

Sincerely,

Horace P. Payne, Jr.

Senior Counsel

¹ See Application of Virginia Electric and Power Company For approval and certification of the proposed 2016 Solar Projects pursuant to §§ 56-580 D and 56-46.1 of the Code of Virginia, and for approval of a rate adjustment clause, designated Rider US-2, under § 56-585.1 A 6 of the Code of Virginia, PUE-2015-00104, (Final Order June 30, 2016).



Virginia Electric and Power Company

d/b/a

Dominion Virginia Power

Annual Report to the State Corporation Commission

on Renewable Energy, in accordance with

§ 56-585.2.H of the Code of Virginia

November 1, 2016

I. INTRODUCTION

Pursuant to § 56-585.2 H of the Code of Virginia ("Va. Code"), Virginia Electric and Power Company ("Dominion Virginia Power" or the "Company") submits this Annual Report on Renewable Energy ("Report") to the Virginia State Corporation Commission ("Commission"). Va. Code § 56-585.2 H requires each investor-owned incumbent electric utility in the Commonwealth to report to the Commission annually on (i) its efforts to meet renewable portfolio standard ("RPS") goals ("RPS Goals"); (ii) its generation of renewable energy; and (iii) advances in renewable generation technology that affect the utility's activities. Exhibit 1 to this Annual Report shows the Company's RPS compliance position for meeting its RPS Goals, including 2015 actual compliance and 2016-2025 forecasted compliance. This Annual Report also describes generally the Company's efforts to support renewable energy development as well as advances in renewable generation technology.

2015 RPS Compliance

The Company met and exceeded its 2015 Virginia RPS Plan renewable target of 1,732,746 megawatt hours ("MWh") through implementation of its RPS Plan approved by the Commission as illustrated in Exhibit 2 of this Annual Report (as verified by J. Scott Gaskill). Renewable generation from the Company's own resources (including through contracts with Non-Utility Generators ("NUGs")) provided 61 percent of Dominion Virginia Power's 2015 RPS Goal, some of which was banked and/or optimized as permitted by Va. Code § 56-585.2.

II. EFFORTS TO MEET RENEWABLE PORTFOLIO STANDARD GOALS

A. <u>Statutory Guidance</u>

For the purposes of complying with Virginia's RPS Goals as set forth in Va. Code § 56-585.2 et seq., "renewable energy" is defined (by reference to Va. Code § 56-576) as:

energy derived from sunlight, wind, falling water, biomass, sustainable or otherwise, (the definitions of which shall be liberally construed), energy from waste, land fill gas, municipal solid waste, wave motion, tides, and geothermal power, and does not include energy derived from coal, oil, natural gas, or nuclear power. Renewable energy shall also include the proportion of the thermal or electric energy from a facility that results from the co-firing of biomass.

Va. Code § 56-585.2 further defines how such renewable energy can qualify for compliance with the Virginia RPS Goals. Such renewable energy must be:

- generated in the Commonwealth or in the interconnection region of the regional transmission entity of which the participating utility is a member, as it may change from time to time, and purchased by a participating utility under a power purchase agreement; provided, however, that if such agreement was executed on or after July 1, 2013, the agreement shall expressly transfer ownership of renewable attributes, in addition to ownership of the energy, to the participating utility;
- generated by a public utility providing electric service in the Commonwealth from a facility in which the public utility owns at least a 49 percent interest and that is located in the Commonwealth, in the interconnection region of the regional transmission entity of which the participating utility is a member, or in a control area adjacent to such interconnection region; or
- represented by renewable energy certificates ("RECs").¹
- "Renewable energy" shall not include electricity generated from pumped storage, but shall include run-of-river generation from a combined pumped-storage and run-of-river facility.

Va. Code § 56-585.2 B provides that "[a]ny investor-owned incumbent electric utility may apply to the Commission for approval to participate in a renewable energy portfolio standard program" and that the "Commission shall approve such application if the applicant demonstrates that it has a reasonable expectation of achieving 12 percent of its base year electric

¹ "Renewable energy certificate" means either (i) a certificate issued by an affiliate of the regional transmission entity of which the participating utility is a member, as it may change from time to time, or any successor to such affiliate, and held or acquired by such utility, that validates the generation of renewable energy by eligible sources in the interconnection region of the regional transmission entity or (ii) a certificate issued by the Commission pursuant to subsection J and held or acquired by a participating utility, that validates a qualified investment made by the participating utility. Va. Code § 56-585.2.

energy sales from renewable energy sources during calendar year 2022, and 15 percent of its base year electric energy sales from renewable energy sources during calendar year 2025 "

Va. Code § 56-585.2 D sets forth the RPS Goals:

- RPS Goal I: In calendar year 2010, 4 percent of total electric energy sold in the base year.
- RPS Goal II: For calendar years 2011 through 2015, inclusive, an average of 4 percent of total electric energy sold in the base year, and in calendar year 2016, 7 percent of total electric energy sold in the base year.
- RPS Goal III: For calendar years 2017 through 2021, inclusive, an average of 7 percent of total electric energy sold in the base year, and in calendar year 2022, 12 percent of total electric energy sold in the base year.
- RPS Goal IV: For calendar years 2023 and 2024, inclusive, an average of 12 percent of total electric energy sold in the base year, and in calendar year 2025, 15 percent of total electric energy sold in the base year.

B. <u>Dominion Virginia Power's RPS Plan</u>

On July 28, 2009, the Company submitted its Application for Approval to Participate in a Renewable Energy Portfolio Standard Program Pursuant to Va. Code § 56-585.2 (the "Application"), in Case No. PUE-2009-00082. The Application represented the Company's initial filing for approval of its RPS Plan. On May 18, 2010, the Commission issued its Final Order (the "Final Order") in that initial proceeding, finding that the Company has demonstrated that it has a reasonable expectation of achieving 12 percent of its base year electric energy sales from renewable energy sources during calendar year 2022, and 15 percent of its base year electric energy sales from renewable energy sources during calendar year 2025, and granting Dominion Virginia Power's Application seeking approval to participate in a RPS program.

Any references to MWh goals, renewable generation and REC transactions set forth in this Annual Report are shown at the Virginia Jurisdictional percentage level and not at the Total

System level. The 2015 Virginia Jurisdictional percentage is 81.3876 percent of the Total System level.²

As set forth in the Company's approved RPS Plan, the Company plans to use existing renewable energy sources (including that renewable energy provided by contract with NUGs),³ to develop new renewable energy generation facilities where feasible, and to purchase RECs to achieve the RPS Goals. Specifically, the renewable energy from existing renewable energy sources identified in the 2016 Integrated Resource Plan, are estimated to be approximately 1 million MWh in 2022 and 1 million MWh in 2025.⁴ The Company also plans to develop additional new renewable generation facilities where feasible or purchase approximately 4.2 million RECs in 2022 and 5.5 million RECs in 2025 to meet and comply with the 2022 and 2025 targets of 5.2 million MWh and 6.5 million MWh, respectively.

The Company met RPS Goal I in 2010.⁵ The Company's RPS Plan will also meet the interim RPS Goals II through IV as described in the RPS Application. Exhibit 1 to this Annual Report shows the Company's RPS compliance position for meeting its RPS Goals, including 2015 actual compliance and 2016-2025 forecasted compliance.

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² Rounded for the purposes of this report to 81.39 percent. This percentage is based on the Company's most recent cost of service study for the 12 months ending December 31, 2015. This allocation factor is used as the basis for apportioning existing generation MWh for inclusion in its Virginia RPS Plan.

³ The Commission approved the Company's use of renewable energy from NUGs where the contract on renewable

³ The Commission approved the Company's use of renewable energy from NUGs where the contract on renewable attributes was silent in its Order on Petition, *Petition of Virginia Electric and Power Company for a declaratory judgment*, Case No. PUE-2010-00132 (June 17, 2011). Legislation passed in 2013 requires "if such agreement was executed on or after July 1, 2013, the agreement shall expressly transfer ownership of renewable attributes, in addition to ownership of the energy, to the participating utility" Virginia Acts of Assembly, 2013 Session, Chapters 308 and 403.

⁴ At this time, most of the NUG contracts have expiration dates prior to 2025.

⁵ Application of Virginia Electric and Power Company for a 2011 biennial review of the rates, terms, and conditions for the provision of generation, distribution, and transmission services pursuant to § 56-585.1 A of the Code of Virginia, Case. No, PUE-2011-00027, Final Order at 22 (Nov. 30, 2011).

1. Total Electric Energy Sold in the Base Year

Pursuant to Va. Code § 56-585.2 A, "[t]otal electric energy sold in the base year" is "total electric energy sold to Virginia jurisdictional retail customers by a participating utility in calendar year 2007, excluding an amount equivalent to the average of the annual percentages of the electric energy that was supplied to such customers from nuclear generating plants for the calendar years 2004 through 2006." The Company has calculated its total electric energy sold in the base year as follows:

Electric Energy Sold to Retail Customers in 2007 (Virginia Jurisdiction)

64,621,534 MWh

Three-year Average (2004-2006) Nuclear Generation (Virginia Jurisdiction)

21,302,885 MWh

Total Electric Energy Sold in the Base Year (Target Baseline)

43,318,649 MWh

2. RPS Goals for the Years 2011 Through 2025

The Company's RPS Goals were established and approved in Case No. PUE-2009-00082 by multiplying the total electric energy sold in the base year (described above) by the RPS Goals for the years 2011 through 2025.

Pursuant to Va. Code § 56-585.2 D, the RPS Goals II-IV are based on multiyear averages. The Company's RPS Goals for each individual year as represented in MWh (or average MWh for a group of years) are as follows:

Year	2011- 2015	2016	2017-2021	2022	2023-24	2025
Percent	4%	7%	7%	12%	12%	15%
	Average		Average		Average	
Goal	1,732,746	3,032,305	3,032,305	5,198,238	5,198,238	6,497,797

3. Resources to Fulfill the RPS Goals

a. Existing DVP Renewable Energy Generation Facilities Included in Approved RPS Plan:⁶

Existing Renewable Energy Facilities Owned by Dominion Virginia Power							
Facility	State	Capacity	Fuel				
Gaston	NC	220 MW	Hydroelectric				
Roanoke Rapids	NC	95 MW	Hydroelectric				
Cushaw	VA	2 MW	Hydroelectric				
North Anna	VA	1 MW	Hydroelectric				
Pittsylvania	VA	83 MW	Biomass				
Subtotal		318 MW	Hydroelectric				
Subtotal		83 MW	Biomass				
Total		401 MW					

Pursuant to Va. Code § 56-585.2 F, utilities participating in a RPS program are permitted to use a combined 1.5 million green tons of certain tree-based material, as defined in the statute.⁷ In its Final Order approving the Company's RPS Plan, the Commission determined that Dominion Virginia Power's pro rata share of the 1.5 million ton restriction for certain green tree-based materials is 73.929 percent or 1,108,940 tons. Since the Company's Pittsylvania biomass facility is grandfathered as an existing facility under the statute, the Company has not burned any incremental tree-based material subject to the 1.5 million ton limitation in 2014.

b. NUG Renewable Energy Resources

In addition to Company-owned resources, Dominion Virginia Power has existing renewable energy resources in the form of long-term contracts with various renewable energy NUGs. In its RPS Application, the Company took the position that the NUG contracts for

⁶ Based on the Company's most recent cost of service study for the 12 months ending December 31, 2015, the Virginia Jurisdiction is responsible for approximately 81.39 percent of the Company's electricity demand, and the Company used this allocation factor as the basis for apportioning approximately 81.39 percent of the existing generation MWh for inclusion in its Virginia RPS Plan. ⁷ Va. Code § 56-585.2 F.

renewable energy include all aspects of that energy, including the renewable attributes. In Case No. PUE-2010-00132, the Commission held that the Company should apply the NUG renewable energy as part of its RPS Plan where the contract was silent on ownership of such renewable attributes. As a result, the Company initially banked the renewable energy generation of 1.9 million MWh produced by qualifying NUGs from 2010-2012. Subsequently, the Company applied approximately 1 million of these MWh toward its 2013 RPS compliance, and 0.8 million MWh in 2014. The Company will apply 0.7 million MWh of the available renewable energy from NUGs towards its 2015 compliance. Because the Commission did not make a specific determination regarding the ownership of the NUG RECs (which may no longer have any value if the Company has the right to use the renewable attributes through application of the renewable energy through it RPS plan), it is unlikely that the Company will be able to optimize the NUG renewable energy where the Company did not also have rights to the RECs.8 Furthermore, through amendments to Va. Code 56-585.2, PPAs executed on or after July 1, 2013 must expressly transfer ownership of renewable attributes to the utility.9

c. New Renewable Energy Sources

The Company has been working to facilitate development of both onshore and offshore wind projects in Virginia for several years. With respect to onshore wind, the Company noted in its 2016 Integrated Resource Plan, filed April 29, 2016, that it had identified three feasible sites for consideration of onshore wind facilities, which could contributed to the Company's renewable energy resource portfolio. These sites are located in the western part of Virginia on mountaintop locations. In addition, Dominion Virginia Power continues to pursue offshore wind

See infra n.2.
 See Chapter 308 of the 2013 Acts of the Assembly.

development in a prudent manner for its customers and for the state's economic development.

Offshore wind has the potential to provide a scalable renewable resource if it can be achieved at reasonable cost to customers. To help determine how this can be accomplished, the Company is involved in two active projects: (1) the Virginia Offshore Wind Technology Advancement Project ("VOWTAP") and (2) commercial development in the Virginia Wind Energy Area ("WEA"), both of which are located approximately 27 miles off the cost of Virginia.

VOWTAP focuses on research and development of offshore wind generation technology, and was one of seven projects selected in 2012 to receive \$4 million each in U.S. Department of Energy ("DOE") funds to support initial engineering, design and permitting. The proposed project would utilize two six-megawatt Alstom turbines to produce 12 MW, which can help power 250 homes at peak demand. In 2014, VOWTAP was one of three finalists to be awarded up to \$47 million in additional DOE funding for continued development toward construction of the 12 MW project; however, DOE withdrew this follow on funding earlier this year after the Company could not guarantee an in-service data for the project earlier than 2020. The status of the VOWTAP is discussed in more detail in Section IV.B of this Report.

The second project is intended to develop a commercial offshore wind generation facility. In October 2013, the Company executed a \$1.6 million lease for 112,800 acres of federal land to develop a commercial-scale offshore wind turbine facility capable of generating up to 2,000 MW of electricity, enough to power approximately 500,000 homes. The Company is actively developing this commercial generation project, with the development schedule in compliance with the lease obligations established by the U.S. Bureau of Ocean Energy Management.

d. Research and Development Initiatives

A 2012 revision to Va. Code § 56-585.2 resulting from Chapters 274 and 717 (HB 1102 and SB 413) of the 2012 Acts of the General Assembly allows utilities that are participating in Virginia's RPS program to meet up to 20 percent of their annual RPS Goals using RECs issued by the Commission for qualified investments in renewable and alternative energy research and development activities. Pursuant to Va. Code § 56-585.2, the Company has partnered with 12 institutions of higher education on Virginia renewable and alternative energy research and development projects.

The Company filed its 2015 Annual Report of Qualified Investments on March 31, 2016, analyzing the prior year's PJM REC prices and quantifying its qualified investments made in 2015 to facilitate the Commission's validation and issuance of RECs for Virginia renewable and alternative energy research and development projects. Based on the methodology established with the first report in 2013, the Company will use 54,789 renewable energy certificates from qualified investments pursuant to Va. Code § 56-585.2 J.

The Company intends to file its annual report by March 31, 2017, analyzing the prior year's PJM REC prices and quantifying its qualified investments made in 2016 to facilitate the Commission's validation and issuance of RECs for Virginia renewable and alternative energy research and development projects. The Company will apply any R&D RECs issued by the Commission towards its 2016 RPS Compliance.

¹⁰ "Qualified investment" means an expense incurred in the Commonwealth by a participating utility in conducting, either by itself or in partnership with institutions of higher education in the Commonwealth or with industrial or commercial customers that have established renewable energy research and development programs in the Commonwealth, research and development activities related to renewable or alternative energy sources, which expense (i) is designed to enhance the participating utility's understanding of emerging energy technologies and their potential impact on and value to the utility's system and customers within the Commonwealth; (ii) promotes economic development within the Commonwealth; (iii) supplements customer-driven alternative energy or energy efficiency initiatives; (iv) supplements alternative energy and energy efficiency initiatives at state or local governmental facilities in the Commonwealth; or (v) is designed to mitigate the environmental impacts of renewable energy projects. Va. Code § 56-585.2.

e. Purchase of RECs

After counting the MWh from the existing renewable energy sources, the RPS Plan calls for the Company to fulfill any deficit by purchasing lower cost RECs that fit within the definition of Va. Code § 56-585.2. Though Virginia law makes no distinction regarding types of RECs based on the source of renewable energy, most jurisdictions and markets do make such distinctions, and currently these distinctions impact the valuation of the RECs. The market price of individual RECs is based on a variety of factors, including energy source. The Company expects that it will be able to fully satisfy the RPS Goals II through IV through the Company's existing renewable generation portfolio, new renewable generation facilities and the purchase of lower cost RECs.

f. Banking of Excess Renewable Energy and/or RECs

Under the RPS Plan, the Company will bank any excess amounts of renewable energy and/or RECs for application in future years in which there is a deficit pursuant to Va. Code § 56-585.2 D. Section 56-585.2 D allows a utility to apply renewable energy sales or RECs acquired during the periods covered by any RPS goal that are in excess of the sales requirement for that goal to the sales requirements for a future RPS goal in the five calendar years after the renewable energy was generated or the renewable energy certificates were created, except that a utility shall be able to apply renewable energy certificates acquired by the utility prior to January 1, 2014.

C. Application of the Renewable Resources to meet the Company's RPS Plan

The Company's RPS Plan will permit the Company to meet its RPS Goals.

1. 2015 Renewable Energy Generated & REC Transactions

The Company met and exceeded its 2015 Virginia RPS Plan renewable target of 1,732,746 MWh through implementation of its RPS Plan approved by the Commission as

illustrated in Exhibit 2 of this report. The Company achieved compliance by applying 444,664 RECs or Renewable Energy created by Company-owned facilities, 639,141 purchased RECs, 600,652 MWh of renewable energy from NUGs, and 54,789 RECs from qualified investments in renewable and alternative energy research and development activities. 11

Company-generated renewable generation (including NUGs) provided 61 percent of Dominion Virginia Power's 2015 RPS Goal, of which some of this was banked and/or optimized.

Pursuant to Va. Code § 56-585.2 H the breakdown of the Company's efforts to meet its RPS goals for 2015 is as follows:

• § 56-585.2 H 1.a. – A list of all states where the purchased or owned renewable energy was generated, specifying the number of megawatt hours or renewable energy certificates originating from each state.

State	PA	MD	NC ¹²	VA	Total
Totals	418,434	0	489,690	4,593,612	5,501,736
Applied	65,093	0	441,116	1,233,037	1,739,246
Banked	353,341	0	0	3,317,915	3,491,256
Optimized	0	0	48,574	222,660	271,234

• § 56-585.2 H 1.b. – A list of the decades in which the purchased or owned renewable energy generating units were placed in service, specifying the number of megawatt hours or renewable energy certificates originating from those units.

Decade	1910s	1930s	1950s	1960s	1980s	1990s	2000s	2010s	Total
Totals	62,702	7,175	233,505	256,185	1,014,524	1,679,794	2,190,671	57,180	5,501,736
Applied	62,702	0	212,304	228,812	542,356	319,548	316,344	57,180	1,739,246

¹¹ Renewable energy certificates for 2015 were deemed issued by the Commission pursuant to Va. Code § 56-585.2

J. The Company's request for that issuance of RECs for 2015 reflected: (1) the Company's actual 2015 expenditures of \$392,295 on research and development activities in the Commonwealth related to renewable or alternative energy sources; and (2) a value of \$7.16 per REC based on the Company's analysis of the average price of publicly available Tier I and Tier 2 RECs.

¹² All of the RECs from NC are from Company-owned renewable energy resources.

Γ	Banked	0	0	0	0	472,168	1,144,761	1,874,327	0	3,491,256
-	Optimized	0	7,175	21,201	27,373	0	215,485	0	0	271,234

• § 56-585.2 H 1.c. – A list of fuel types used to generate the purchased or owned renewable energy, specifying the number of megawatt hours or renewable energy certificates originating from each fuel type.

			Biomass (Wood	Landfill			
Fuel Type	Hydro	MSW	Waste)	Gas	R&D	Thermal	Total
Totals	700,483	2,320,948	215,485	19,360	54,789	2,190,671	5,501,736
Applied	509,757	858,356	0	0	54,789	316,344	1,739,246
Banked	134,977	1,462,592	0	19,360	0	1,874,327	3,491,256
Optimized	55,749	0	215,485	0	0_	0	271,234

2. 2016 Renewable Energy Generated & REC Transactions

The Company will meet or exceed its 2016 Virginia RPS Plan renewable target of 3,032,305 MWh through implementation of its RPS Plan approved by the Commission which is illustrated in Exhibit 3.

a. <u>Company-Owned Facilities</u>

Total renewable energy production for 2016, through September 30, 2016, from renewable energy facilities owned by the Company and included in the RPS Plan was 628,251 MWh. The Company estimates the total renewable energy production from these resources for calendar year 2016 will be 721,052 MWh.

b. NUGs

The Company has determined that the renewable energy production from contracted NUGs year-to-date through September 30, 2016 is 130,082 MWh. The Company estimates the total qualified renewable energy production from existing contracted NUGs for calendar year

2016 will be 169,651 MWh. Any renewable energy not needed to meet the 2016 Goal will be banked for future use as permitted by statute.

c. 2016 REC Transactions (Purchase for Virginia RPS Compliance/Sales for Optimization)

The Company's REC transactions for 2016, through September 30, 2016, are summarized as follows:

- 172,296 Company-generated higher value RECs optimized
- 2,391,114 lower cost RECs purchased, including replacement RECs

d. RECs from R&D

As discussed in Section II.B.3.d. above, the Company intends to file its annual report by March 31, 2017, analyzing the prior year's PJM REC prices and quantifying its qualified investments made in 2016 to facilitate the Commission's validation and issuance of RECs for Virginia renewable and alternative energy research and development projects. The Company will apply any R&D RECs issued by the Commission towards its 2016 RPS Compliance.

Although the Company is allowed to meet up to 20 percent (606,461) of its RPS Goal with R&D RECs, Exhibit 3 includes the Company's conservative estimate of 50,000 R&D RECs for 2016.

e. <u>Banking of Excess Renewable Energy and/or RECs</u>

The Company began 2016 with banked renewable energy and RECs of 3,491,255 MWh and expects to have a bank of approximately 4,001,330 MWh of renewable energy and RECs toward future RPS targets at year-end 2016.

3. Years 2017 Through 2025 Renewable Plan

Exhibit 1 to this Annual Report outlines the Company's Virginia RPS Plan from 2015 through 2025, including actual totals for 2015 and forecasts for the remaining years. This exhibit

has been updated to reflect the assumptions used for the 2016 Integrated Resource Plan. For planning purposes, for years 2017 through 2025, no REC optimization is assumed. Based on current information, the Company forecasts that it will continue to be able to fully satisfy the RPS Goals I through IV through the Company's existing renewable generation portfolio, through the purchase of RECs (including optimization) and new renewable generation where economically feasible.

III. OVERALL DEVELOPMENT OF RENEWABLE ENERGY

As discussed in Section II.B.3.a. above, the Company has over 400 MW of renewable energy capacity that it generates at its hydroelectric and biomass facilities that were included in the approved RPS Plan. The Company also intends to continue prudent development of a number of new renewable energy facilities through the 2025 timeframe as discussed in Section II.B.3.c. In addition, potential future renewable energy resources are discussed in Section IV below.

The Company is actively developing certain additional new renewable generation facilities not included in its approved RPS Plan. Decisions to build new renewable generation are primarily determined based on need and as part of the Company's Integrated Resource Planning process, and subject to Commission issuance of a certificate of public convenience and necessity.

Specifically, the Company continues to evaluate renewable development opportunities, such as 60 MW of renewable energy from its Virginia City Hybrid Energy Center ("VCHEC")

using biomass co-fired with coal which began in 2013.¹³ In addition, the Company has developed 153 MW of renewable energy as a result of the conversion of the Altavista, Hopewell and Southampton Power Stations from burning coal to biomass (primarily waste wood) ("Biomass Conversions"), which entered commercial operation on July 12, 2013, October 18, 2013, and November 28, 2013, respectively. The Biomass Conversions use primarily waste wood, within the parameters of the state's restriction on certain tree-based materials mentioned previously in Section II.B.3.a. The Company treats revenues from the RECs generated by the facilities as credits to customers to offset costs, which flow through the Rider B rate adjustment clause approved under Va. Code § 56-585.1 A 6.

Though not part of the Company's RPS Plan, the Company is also encouraging customers to support renewable energy generation resources in the region through voluntary participation in several renewable energy options. Dominion Virginia Power's Rider G Renewable Energy Program, commonly referred to as the "Green Tariff" and marketed as "Dominion Green Power®" became effective on January 1, 2009, and offers customers a companion rate for the purchase and retirement of RECs equal to all or a portion of a customer's monthly consumption. Launched in 2009, the Dominion Green Power® program currently has more than 24,000 participants, with approximately 55 percent of the participants choosing to match 100 percent of their monthly energy usage with purchases of RECs. The RECs purchased on behalf of customers participating in this voluntary program are not counted toward the Virginia RPS compliance goals. Rather, this program offers Dominion Virginia Power

¹³ VCHEC is designed to produce up to 120 MW of renewable energy, but the actual amount of renewable energy produced at the facility may vary from year to year, particularly as plant operations continue to develop over the first 8-10 years. In 2013, one percent of the fuel utilized at VCHEC was biomass. It is anticipated that it will provide approximately three percent of renewable energy in 2014 and step up each year thereafter until it reaches ten percent of renewable energy starting in 2020.

customers an additional way to support renewable energy above and beyond Dominion's renewable energy initiatives.

In addition, pursuant to Chapter 771 of the 2011 Virginia Acts of Assembly, the Company has developed a solar distributed generation program consisting of two separate components. On November 28, 2012, the Commission approved the first component, the Solar Partnership Program (formerly the "Community Solar" Program), a demonstration program to study the impact and assess the benefits of distributed solar photovoltaic generation on its distribution system through the construction and operation of Company-owned distributed solar generation installations. Under the Solar Partnership Program, the Company is authorized to construct and operate Company-owned solar facilities on leased rooftops or on the grounds of commercial businesses and public properties throughout its Virginia service area, subject to a capacity and cost cap set in the Commission's 2012 Order approving the Program. The Company currently uses the proceeds it receives from selling the RECs obtained from the Solar Partnership Program to offset the costs of the Program.

On March 22, 2013, the Commission approved the Company's Solar Purchase Program, the second component of the Company's Chapter 771 initiatives. The Solar Purchase Program is a demonstration program consisting of a special tariff under which the Company will purchase no more than 3 MW of energy output from customer-owned distributed solar generation installations, offered as an alternative to net energy metering. Participating customers install and own the solar generation system located on their property, but sell the electricity and solar RECs back to Dominion Virginia Power at a premium rate of 15 cents per kilowatt-hour. Participating customers purchase all of the electricity for their home or business from the Company on their current rate schedule. The renewable energy certificates obtained from the Solar Purchase

Program will be incorporated into the Dominion Green Power® program REC portfolio as

Virginia-based solar RECs and retired on behalf of the customers voluntarily participating in the

Dominion Green Power® program.

The customer interest in both of these solar programs has remained steady, and the Company is pleased with the progress being made toward achieving the goals and intent of the programs.

On December 16, 2013, the Commission approved the Company's proposed renewable generation pilot program including another new experimental and voluntary tariff, Rate Schedule RG - Renewable Energy Supply Service ("Rate Schedule RG"), with certain additional requirements. Rate Schedule RG is designed to provide large, non-residential customers served under Schedule GS-3 and GS-4 with the option to purchase a greater percentage of their energy needs from renewable energy resources than they currently receive from the Company's existing generation mix. Rate Schedule RG was officially launched April 1, 2014. Eligible customers sign a contract for the Company to purchase additional amounts of renewable energy as determined by the customer. The customer is responsible for all costs associated with its additional purchase of renewable energy under Rate Schedule RG, including the administrative fee. Additionally, the renewable energy supplier signs a power purchase agreement with the Company equal to the amount of renewable energy to be purchased under the customer's contract. The remainder of the customer's energy requirements, as well as all of the customer's capacity requirements, are provided under their existing Rate Schedule GS-3 or GS-4.

On August 7, 2015, pursuant to § 56-234 B of the Code and in accordance with the blanket certificate of public convenience and necessity issued for the Company's Solar

Partnership Program, the Commission approved the Dominion Community Solar Pilot and experimental rate, designated "Rider DCS - Dominion Community Solar (Experimental)," to allow customers to voluntarily support the development of additional Company-owned, direct current distributed solar generation facilities sited in Virginia.

On June 30, 2016, the Commission approved the Company's application for certificates of public convenience and necessity (CPCN) to build 56 megawatts of large-scale solar facilities that would begin producing renewable energy by December of 2016. Specifically, the Company was issued certificates of public convenience and necessity for three separate solar projects. The three projects are: (1) Scott Solar: This solar project will produce about 17 megawatts of electricity and would be located on approximately 180 acres of land in Powhatan County. (2) Whitehouse Solar: This solar project would generate about 20 MW and would be located on a 230-acre site in Louisa County; and (3) Woodland Solar: This solar project will produce approximately 19 MW of electricity and will be constructed on approximately 200 acres located in Isle of Wight County. The RECs produced by these three solar projects will be sold to reduce the costs of the projects for the benefit of customers and will not be used for RPS compliance.¹⁴ The Company is actively developing utility scale solar projects. In 2015 the Company signed two PPAs of 20 MW each for solar capacity to serve Dominion Virginia Power's customers. One of these was subsequently terminated by the developer, but development continues on the other. The RECs from the remaining PPA will not be applied for RPS compliance.

¹⁴ See Application of Virginia Electric and Power Company For approval and certification of the proposed 2016 Solar Projects pursuant to §§ 56-580 D and 56-46.1 of the Code of Virginia, and for approval of a rate adjustment clause, designated Rider US-2, under § 56-585.1 A 6 of the Code of Virginia, PUE-2015-00104, Application at 14-15. (Final Order June 30, 2016).

The Company is also seeking to meet customers' requests for renewable energy options by developing solar projects to serve specific customers. In 2016, the Company requested that the Commission grant CPCNs for the Oceana Solar Facility¹⁵ and the Remington Solar Facility.¹⁶

IV. ADVANCES IN RENEWABLE GENERATION TECHNOLOGY

As detailed in its 2016 IRP, the Company continues to monitor and stay abreast of developments with respect to viable commercial and utility-scale emerging generation technologies, including renewable energy and energy storage technologies. Dominion's efforts to advance solar and offshore wind technologies in Virginia are discussed further below:

A. Solar

In 2015 solar photovoltaic ("PV") as a percent of total electricity generated in the U.S. remained small, comprising only 0.6 percent. 17 Despite its small percentage of total generation, solar PV technology continues to be one of the most rapidly growing renewable energy sectors. By year end 2015, 278 utility-scale (ground-mounted and larger than 5 MW) PV facilities totaling more than 9,000 MW were operating in the U.S. Nearly one-third of this capacity became operational in 2015. Large utility-scale solar projects continue to be the fastest-growing segment of the solar market. Installed prices for solar PV have also continued to decline. Government incentives and policy initiatives continue to drive the rapid growth of solar. In December 2015, a 30 percent federal tax credit for solar which was scheduled to end on December 31, 2016 was extended for three years through 2019, after which time it will remain in place but drop to 10 percent. The extension of the federal tax credit will continue to contribute to

¹⁷ U.S. Energy Information Administration https://www.eia.gov/tools/faqs/faq.cfm?id=427&t=3

¹⁵ Petition of Virginia Electric and Power Company For approval and certification of the proposed Oceana Solar Facility pursuant to §§ 56-580 D and 56-46.1 of the Code of Virginia, PUE-2016-00079, Aug. 1, 2016.

¹⁶ Petition of Virginia Electric and Power Company For approval and certification of the proposed Remington Solar Facility pursuant to §§ 56-580 D and 56-46.1 of the Code of Virginia, PUE-2016-00048, May 4, 2016.

the cost competitiveness of this resource. Additionally, the Department of Energy's SunShot Initiative has a goal to reduce the cost of PV-generated electricity to \$0.06 per kWh, without incentives, by the year 2020. As part of this initiative, the Company was awarded a \$3.041 million grant under the Solar Market Pathways program to develop a sustainable utility-administered solar strategy for Virginia. Four solar studies have been completed that assessed the impacts of increased solar penetration on the generation, transmission, and distribution systems, the potential reduction of soft costs and tax normalization, as well as best practices for implementing community solar programs across the country. The results of these studies have been used to develop a solar strategy for the Commonwealth of Virginia in consultation with a team of stakeholders from across the Commonwealth. Ultimately, the project will create a strategy that will promote wider deployment of solar in Virginia and serve as a replicable model for other states across the Southeast.

As discussed in Section III above, the Company has been developing solar energy facilities and options for its customers.

B. Offshore Wind

Offshore wind has the potential to provide a large, scalable renewable resource for Virginia with near-term resource availability of approximately 2,000 MW. Virginia has a unique offshore wind opportunity due to its shallow continental shelf extending approximately 40 miles off the coast, proximity to load centers, availability of local supply chain infrastructure, and world class port facilities. However, one challenge facing offshore wind development is its complex and costly installation and maintenance when compared to onshore wind. As a result, the Company is actively participating in offshore wind policy and innovative technology development in order to identify ways to advance offshore wind responsibly and cost-effectively.

¹⁸ http://energy.gov/eere/sunshot/downloads/sunshot-initiative-fact-sheet

In 2010, the Virginia General Assembly passed legislation creating the Virginia Offshore Wind Development Authority ("VOWDA") to help facilitate offshore wind energy development in the Commonwealth. The Company is represented at the VOWDA by an appointee of the Governor. As required by this legislation, the Company completed an offshore wind transmission study to determine possible offshore wind interconnection points to the transmission grid. The Company released the results of the study in December 2010, which found that it would be possible to interconnect large scale wind generation facilities with the existing grid in Virginia Beach, Virginia. In House Joint Resolution 605, the 2011 Virginia General Assembly established a goal to develop 3,000 MW of offshore wind by 2025. The General Assembly has also amended Va. Code § 56-585.1 in recent years to further incent offshore wind development by Virginia electric utilities.

In February 2012, the Company completed a second study to evaluate the build options for high voltage underground transmission from Virginia Beach into the Atlantic Ocean to support potentially multiple offshore wind projects. The study found that for every 500-700 MW (nameplate) of offshore wind capacity constructed, one service platform is appropriate with two lines to shore. This transmission solution limits the potential for stranded offshore transmission investment and emphasizes the potential cost savings that may be achieved through a phased build-out approach.

As discussed in Section II.B.3.c., in December 2012, a private/public collaborative led by Dominion Virginia Power was one of seven projects selected by the DOE to receive a \$4 million award for initial engineering, design and permitting for VOWTAP. The Company's team was among three finalists selected by DOE in May 2014, for continued development toward construction.

However, since that time, the Company has experienced challenges with respect to development of VOWTAP, primarily due to higher than anticipated cost estimates to construct the facility. An initial RFP process in 2015 yielded only one complete bid that did not provide a firm price and reflected a construction cost estimate that was significantly higher than initial estimates. In 2015, the Company announced a delay in VOWTAP to provide time to work with stakeholders to find additional ways to reduce the cost and risks of this project. The extensive stakeholder effort involved 87 different participants from a variety of sectors with expertise and interest in offshore wind. Stakeholders included representatives of state and federal agencies, elected officials, DOE representatives, domestic and European contractors and suppliers, representatives of utilities, universities, environmental groups, and the media. As a result of the stakeholder group, an improved contract strategy intended to help lower the cost of the installation was initiated and a second RFP was issued. While this second RFP process yielded a reduction in estimated costs, it produced a wide range of estimates with costs that continue to pose a challenge to development of the project. Another setback the project has encountered was the DOE's withdrawal of \$40 million in funding the project had received. The DOE made this decision after the Company could not guarantee an in-service date for the project earlier than 2020.

As also discussed in Section II.B.3.c., Dominion Virginia Power won the lease for 112,800 acres of federal land off the coast of Virginia to develop an offshore wind turbine facility capable of generating up to 2,000 MW of electricity, enough to power approximately 500,000 homes. The Department of Interior's Bureau of Ocean Energy Management ("BOEM") is the lead federal agency in charge of leasing areas for offshore wind development on the outer

continental shelf. Dominion will proceed with the BOEM timetable for development of the commercial wind energy area while advancing its research project and looking for ways to lower the cost of bringing offshore wind generation to customers.

The Company has been actively working with the federal government, Virginia's state government, the City of Virginia Beach, and other partners to develop offshore wind for several years, and the auction was another important step forward.

V. CONCLUSION

As noted in its 2016 Integrated Resource Plan, the Company has a strong commitment to a cost-effective renewable energy program. The Company received Commission approval of its proposed RPS Plan in Case No. PUE-2009-00082, demonstrating that it has a reasonable expectation of achieving 12 percent of its base year electric energy sales from renewable energy sources during calendar year 2022, and 15 percent of its base year electric energy sales from renewable energy sources during calendar year 2025. The Company views its efforts toward its RPS Plan in Virginia in the past year, as well as its overall approach to the development of renewable resources, as successful.

The Company continues to move forward in implementing its cost-effective renewable energy program, as outlined in this Annual Report to the Commission.

EXHIBIT 1

ANNUAL REPORT TO THE SCC ON RENEWABLE ENERGY DOMINION VIRGINIA POWER RENEWABLE ENERGY PORTFOLIO STANDARD PROGRAM VIRGINIA GOALS

		<u>T0</u>	TAL ELECTR	IC ENERGY	SOLD IN TH	<u>E BASE YEA</u>	<u>R</u>				
Total Electric Energy Sold to Virginia J Less Three-year Average (2004-2006) Total Electric Energy Sold in the Base	Nuclear Genera		2007	64,621,534 N 21,302,885 N 43,318,649 N	/ Wh						
		REN	EWABLE EN	ERGY PORT	FOLIO STAI	NDARD GOA	L <u>S</u>		ing and Option (Alberta		
Percent	2015 4%	2016 7%	2017 7%	2018 7%	2019 7%	2020 7%	2021 7%	2022 12%	2023 12%	2024 12%	202 5
Goal (MWh)	1,732,746	3,032,305	3,032,305	3,032,305	3,032,305	3,032,305	3,032,305	5,198,238	5,198,238	5,198,238	6,497,797
	2015 ²	<u>HENE</u>)	2017	2018	2019	ARD PROGE 2020	<u>KAIVI</u> 2021	2022	2023	2024	2025
Generation Resources (MWh)	- 4 (<u>- 1</u>	4.44			af Affaani						4 - 1022
Small Hydro Large Hydro	10,723 489,690	10,279 588,187	12,354 411,987	12,353 411,987	12,354 411,987	12,354 411,987	12,354 411,987	12,354 411,987	12,354 411,987	12,354 411,987	12,354 411,987
Pittsylvania	215,485	122,583	105,713	173,406	263,222	374,499	483,191	391,312	400,975	394,072	398,763
NUGS	338,131	169,651	0	0	0	700.044	0	015.650	0 005 016	019.413	902 104
	338,131 1,054,029	169,651 890,700	530,054	597,746	687,563	0 798,841	907,532	815,653	825,316	818,413	823,104
NUGS			530,054 530,054	597,746 597,746							823,104 823,104
NUGS Total	1,054,029	890,700			687,563	798,841	907,532	815,653	825,316	818,413	

NOTES: 1 - Based on Strategist forecast used for the 2016 VA IRP and 12/31/2015 Virginia Jurisdictional allocation of DOM load of 81.39%

^{2 - 2015} is actual and 2016 includes actuals through 9/30/2016 and projections through year-end

^{3 -}Total Renewable Resources includes Company and allowable NUG generated renewable energy, REC purchases, R&D RECs and REC Optimization

EXHIBIT 2 DOMINION VIRGINIA POWER

RENEWABLE ENERGY PORTFOLIO STANDARD PROGRAM 2015 SUMMARY

TOTAL E	LECTRIC EI	VERGY SOLD IN TH	IE BASE YEAR (MWh)

Total Electric Energy Sold to Virginia Jurisdictional Retail Customers in 2007 Less Three-year Average Percentages (2004-2006) Nuclear Generation Total Electric Energy Sold in the Base Year 64,621,534 21,302,885 43,318,649

RENEWABLE ENERGY PORTFOLIO STANDARD GOALS

Percent Goal (MWh) 2015 4%

1,732,746

Company RPS Generation Resources (MWh)	Total Energy Generated during 2015	VA Jurisdictional Energy Generated during 2015 ⁽¹⁾
Company Owned		
Hydro		
Cushaw	8,816	7,175
North Anna	4,360	3,548
Gaston	314,772	256,185
Roanoke Rapids	286,906	233,505
Subtotal Hydro	614,854	500,413
Biomass		
Pittsylvania	264,764	215,485
Subtotal Biomass	264,764	215,485
Total Company Owned	879,618	715,898
NUGS ⁽²⁾	415,458	338,131
TOTAL Renewable Energy Generated During 2015 Total Company Generated Renewable Energy as a % of goal	1,295,076	1,054,029 61%
Less Company Generated Renewable Energy Credits Optimized		(271,234
Total Renewable Energy Available for 2015 Compliance		782,795
R & D RECs		54,789
REC Purchases		2,735,643
NUG Renewable Energy and RECs Previously Banked		1,657,274
Total Renewable Energy and RECs Available for 2015 Complian	ıce	5,230,501
Less Renewable Energy and RECs Banked for Future RPS Appl	lication	(3,491,255
Renewable Energy and RECs Applied for Compliance ²		1,739,246

Notes: (1) Based on VA jurisdictional allocation of 81.3876%.

(2) Because Goal II is a multi-year average, the Company applied 1,735,746 for RPS Compliance for 2010 - 2014 and 1,739,246 in 2015.

EXHIBIT 3

DOMINION VIRGINIA POWER

RENEWABLE ENERGY PORTFOLIO STANDARD PROGRAM 2016 SUMMARY						
TOTAL ELECTRIC ENERGY SOLD IN THE BASE YEAR (MWh Total Electric Energy Sold to Virginia Jurisdictional Retail Custon Less Three-year Average Percentages (2004-2006) Nuclear Ger Total Electric Energy Sold in the Base Year	ners in 2007		64,621,534 21,302,885 43,318,649			
RENEWABLE ENERGY PORTFOLIO STANDARD GOALS Percent			2016			
Company RPS Generation Resources (MWh)	Actual through September 30, 2016	Projected through Balance of Year	3,032,305 Estimated Total 2016 ⁽¹⁾			
Company Owned						
Hydro						
Cushaw	5,527	1,323				
North Anna	3,111	319				
Gaston	274,482	39,121				
Roanoke Rapids	238,362	36,223				
Subtotal Hydro	521,482	76,986	598,468			
Biomass						
Pittsylvania	106,769	15,815				
Subtotal Biomass	106,769	15,815	122,584			
Total Company Owned	628,251	92,801	721,052			
NUG Renewable Energy	130,082	39,566	169,648			
TOTAL	758,333	132,367	890,700			
Company-Owned Renewables	628,251	92,801				
less REC-Optimized Resources	(172,296)	(17,138)				
Net Company-Owned	455,955	75,663	531,618			
REC Purchases	2,391,114	400,000	2,791,114			
R&D RECs ²			50,000			

169,648

3,542,380

3,491,255

3,032,305

4,001,330

39,566

515,229

130,082

2,977,151

Renewable Resources to be Retired (per Target) Company's Estimated Net Renewable Position for 2016 Year-End Notes: (1) Based on projected VA jurisdictional allocation of 81.39%.

NUG Renewable Energy

2015 Bank Carried Forward

TOTAL 2016 Renewable Resources

(2) Based on projected Qualified Investments and preliminary PJM REC price analysis.

VERIFICATION

Virginia Electric and Power Company's 2015 RPS Goal Compliance

I, J. Scott Gaskill, Director – Power Contracts, in Energy Supply, for Virginia Electric and Power Company d/b/a Dominion Virginia Power, do solemnly swear that the information and data in the preceding Exhibit 2 (to the 2016 RPS Annual Report) in reference to Dominion Virginia Power having met its 2015 RPS Goal, are true and correct to the best of my knowledge and belief.

J. Scott Gaskill	
COMMONWEALTH OF VIRGINIA City of Richmond)) to wit:)
The foregoing instrument was sw October, 2016.	vorn to and acknowledged before me this <u>37 th</u> day o
	Stephanie I Smith Notary Public

My registration number is 270003 and my commission expires: 31, 3020

